ITEM 83 FY94
04DS1
9 September 1992

PURCHASE DESCRIPTION

SYNTHESIZED SIGNAL GENERATOR (10 kHz to 2600 MHz)

FSNVM-C

1.0 GENERAL This procurement requires a programmable synthesized signal generator employing no more then two plug-ins and covering a frequency range of 10 kHz to 2600 MHz.

2.0 CLASSIFICATION The synthesized signal generator described herein shall meet the requirements of MIL-T-28800( ), Type III, Class 5, Style E, Color R for the Navy shipboard, submarine, and shore applications with the following exceptions:

a. The Electromagnetic Interference requirements of MIL-T-28800( ) are limited to CE01, CE03, CS01, CS02 (0.05 to 100 MHz), CS06, RE01 (relaxed 20 dB; back panel search excluded), RE02 (14 kHz to 10 GHz), and RS03.

b. The warm-up time is extended to 2 hours.

3.0 OPERATIONAL REQUIREMENTS. The equipment shall be capable of generating signals within the parameters and accuracies specified herein.

3.1 Frequency Characteristics {F = carrier frequency}

3.1.1 Frequency Range: At least 10 kHz to 2600 MHz

3.1.2 Frequency Resolution: 1 Hz [F < 1.3 GHz]; 2 Hz [F > 1.3 GHz]

3.1.3 Frequency Stability

3.1.3.1 Internal: At least $\pm 3 \times 10^{-9}$/day
3.1.3.2 External: Equal to external standard frequency stability

3.1.4 Spectral Purity

3.1.4.1 Harmonics/Sub-harmonics: < -25 dBc [F < 1.3 GHz]; < -20 dBc [F > 1.3 GHz]
3.1.4.2 Non-Harmonics/Spurious: At least -50 dBc
3.1.4.3 Single Sideband Phase Noise: Less than -100dBc/Hz at 10 kHz offset

3.1.5 Reference Frequency

3.1.5.1 Internal Reference Oscillator: 10 MHz
3.1.5.2 External Reference Oscillator: 5 or 10 MHz, 0.5 to 2.0 Vrms into 170 ohms

3.2 Output Characteristics

3.2.1 Range: +10 to -136 dBm [F < 1.3 GHz]; + 7 to -136 dBm [F > 1.3 GHz]

3.2.2 Accuracy: ±2.0 dB [F < 110 MHz]
±2.5 dB [> -70 dBm]; ±3.5 dB [< -70 dBm] [1 MHz < F < 2.6 GHz]

3.2.3 Flatness: ±2.0 dB

3.2.4 Digital Sweep: Auto, single, or manual operation with selectable speeds 0.1, 1.0 or 50 seconds

3.3 Modulation Characteristics

3.3.1 Amplitude Modulation (AM)

3.3.1.1 Internal AM
3.3.1.1.1 Rate: At least 400 Hz and 1 kHz ±5%
3.3.1.1.2 Depth: At least 0 to 90% [F < 1.3 GHz]; 0 to 50% [F > 1.3 GHz]
3.3.1.1.3 Accuracy: ±10% of full scale
3.3.1.1.4 Distortion: Less than 5% at 50% depth and 1 kHz rate

3.3.1.2 External AM
3.3.1.2.1 Rate: At least 20 Hz to 10 kHz [F > 4 MHz]; 20 Hz to 5 kHz [0.4 < F < 4 MHz] 0 Hz to 100 Hz [F < 0.4 MHz]
3.3.1.2.2 Depth: At least 0 to 90% [F < 1.3 GHz]; 0 to 50% [F > 1.3 GHz]
3.3.1.2.3 Accuracy: ±10% of full scale
3.3.1.2.4 Distortion: Less than 5% at 50% depth and 1 kHz rate
3.3.1.2.5 Input impedance: 600 ohms

3.3.2 Frequency Modulation (FM) {ΔF = FM deviation}

3.3.2.1 Internal FM
3.3.2.1.1 Rate: At least 400 and 1 kHz ±5%
3.3.2.1.2 Deviation: At least 0 to 1 MHz [F < 110 MHz]; 0 to 200 kHz [1 MHz < F < 1.3 GHz] 0 to 400 kHz [F > 1.3 GHz]
3.3.2.1.3 Accuracy: ±5% of full scale

3.3.2.2 External FM
3.3.2.2.1 Rate: At least dc to 1 MHz [F < 110 MHz]; dc to 200 kHz [1 MHz < F < 2.6 GHz]
3.3.2.2.2 Deviation: At least 0 to 1 MHz [F < 110 MHz]; 0 to 200 kHz [1 MHz < F < 1.3 GHz] 0 to 400 kHz [F > 1.3 GHz]
3.3.2.2.3 Distortion: <3% [ΔF < 1 MHz @ rates < 20 kHz]
3.3.2.2.4 Input impedance: 600 ohms

4.0 General Requirements

4.1 Power: 115/230 vac ±10%, single phase, 50, 60 or 400 Hz ±10%, 350 watts maximum

4.2 Lithium Batteries: Per MIL-T-28800, lithium batteries are prohibited without prior authorization. Requests for approving the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.

4.3 Dimensions: The total volume of the unit shall not exceed 2828 in^3 (46,342 cm^3) with a maximum height of 7.25 in.

4.4 Weight: The total weight of the unit shall not exceed 30 kg (66 lb).

4.5 Calibration Interval: The calibration interval shall be 12 months minimum. The equipment shall be within all accuracy requirements specified herein, with a 72% or greater confidence factor following a calibration interval of 12 months.

4.6 Remote Programming: The generator shall be capable of being remotely controlled via the IEEE-488 interface bus, operating as both a talker and listener, having at least the following subset of bus functions: AH1, L4, SH1, T6, SR1, DC1, and RL1.